

**JAMES R. WINGFIELD, Ph.D., C.R.E.**  
Senior Reliability & Safety Consultant  
ASQ Certified Reliability Engineer  
CRE 02736

**EDUCATION**

Two years of undergraduate study in Engineering Sciences, Purdue University, 1965  
B.S. Mathematics/Physics, Illinois Institute of Technology, 1970  
M.S. Degree in Mechanical Engineering, University of Arizona, 1988  
Ph.D. Engineering, California Coast University, 1994

**HONORS**

Engineering Honor Roll - Purdue University  
Graduated with distinction - Illinois Institute of Technology

**PROFESSIONAL SOCIETIES**

American Society for Quality (ASQ)  
Reliability Division  
American Society of Safety Engineers (ASSE)  
American Society of Mechanical Engineers (ASME)

**PROFESSIONAL AFFILIATIONS**

Illinois Institute of Technology - Adjunct Professor, Department of Mechanical and  
Aerospace Engineering

**PROFESSIONAL DEVELOPMENT - SEMINARS**

1. "28th Annual Reliability Engineering Institute," The University of Arizona, October 1990, Tucson, Arizona.
2. "Random Vibrations Seminar and Workshop," The University of Arizona, April 1992, Tucson, Arizona.
3. "Fault Tolerant Design for Improved Reliability," Department of Engineering, The University of Wisconsin, August 1992, Madison, Wisconsin.
4. "Application of Failure Mode and Effect Analysis to the Design Manufacture of Medical Devices," College of Engineering, University of Wisconsin, February 1 - 3, 1995, Orlando, Florida.



## EMPLOYMENT

1.     Employer:     Triodyne Inc., Niles, Illinois  
       Business:    Consulting Engineers and Scientists  
       Position:     Senior Reliability and Safety Consultant  
       Duration:     1987 - present  
       Duties:       Failure analysis, electro mechanical and mechanical reliability and safety engineering analysis.
  
2.     Employer:     Travenol Laboratories, Baxter Healthcare, Round Lake, Illinois  
       Business:     Manufacturer of devices for the health care industry  
       Position:     Manager Corporate Hardware Reliability Engineering  
       Duration:     1979-1987  
       Duties:       Managed group of electrical and mechanical engineers. Responsibility for the Safety and Reliability of all Travenol designed and vendor procured hardware systems and equipment. Additional responsibility for approving and accepting all in-house and vendor designed manufacturing equipment for use in production facilities. Performed Systems Hazard Analysis for critical devices to establish the production of hazards related to equipment/component failures, human factors, and environmental incursions. Performed Failure Modes and Effects Analysis (FMEA) to validate fail safe design approaches. Conducted failure investigations on products in field. Consultant to medical and legal staff on regulatory and potential liability issues.
  
3.     Employer:     IIT Research Institute (IITRI)  
       Business:     Research affiliate of the Illinois Institute of Technology performing contract studies for government and industry.  
       Position:     Research Engineer  
       Duration:     1961-1975, 1977-1979  
       Duties:       Participated in experimental materials and structural analysis research projects for the National Aeronautical Space Administration and the U.S. Air Force. Performed reliability engineering studies for customers including the Aviation Systems Command and the Federal Aviation Administration. Performed safety studies for the Consumer Product Safety Commission including an evaluation of protection alternatives for electrically operated power tools and a study of nationwide product related accident patterns. Project engineer in the Medical Sciences and Engineering Division conducting research programs in medical device applications for the National Institute of Health.

4.   Employer:   Triodyne Inc., Niles, Illinois  
      Business:   Consulting engineers and scientists  
      Position:   Senior Research Engineer  
      Duration:   1975-1977  
      Duties:     Performed engineering investigations into product and industrial equipment failures and personal injury cases. Provided supporting investigations and research into applicable standards and engineering specifications.
  
5.   Employer:   Standard Railway Corporation (STANRAY) Chicago, Illinois  
      Business:   Railroad and diversified industrial and commercial products including FRP Boats, Precision Machine Parts, Aircraft Ground Facilities, and Engineered Plastic Products, Fabricator of Structural Steel and Aluminum Highway Bridges.  
      Position:   Machine Designer  
      Duration:   1959-1961  
      Duties:     Designed experimental prototypes of production equipment. Designed and conducted industrial experiments to optimize the structural properties of fiber reinforced plastic materials. Participated in the design and development of new products; FRP Truck cabs, corrugated structural members and specialized FRP applications.
  
6.   Employer:   O.C. Kraft Engineering, Gary, Indiana  
      Business:   Electrical Engineering Consultants  
      Position:   Draftsman  
      Duration:   1958-1959  
      Duties:     Plant layout, facilities engineering, electrical control circuit diagraming.
  
7.   Employer:   Inland Steel Co., East Chicago, Indiana  
      Business:   Basic Steel Production  
      Position:   Instrument Technician/Blast Furnace Engineer  
      Duration:   1953-1957  
      Duties:     Install, service, maintain process recording and controlling instrumentation in all areas of the steel manufacturing process including: Blast Furnace and Open Hearth, Rolling Mills, Tin Mills, and all associated Analytical Laboratories.
  
8.   Employer:   Continental Machine, East Chicago, Indiana  
      Business:   Industrial Machine Shop  
      Position:   Machinist - Apprenticeship program  
      Duration:   1952-1953  
      Duties:     Operated lathes, boring mills, shapers, surface grinders and other machine shop equipment under the apprenticeship program.

9.     Employer:     Elgin National Watch Co., Elgin, Illinois  
       Business     Manufacturer of watches and precision industrial parts  
       Duration:    1950-1951  
       Duties:      Assembled precision parts in the industrial products division - completed 12  
                      month program in watchmaking, Elgin Watch College.

#### SCIENTIFIC PAPERS AND STUDIES

1.     "Fracture of Brittle Materials, Transient Mechanical and Thermal Loading," R. L. Barnett, P. Hermann, and J. Wingfield, AFFDL-TR 66-220, March 1967.
2.     "Operations Research Analysis of Aircraft Noise Abatement Users Manual," J. Lauer, J. Wingfield, and A. Juskys, June, 1968.
3.     "Statistical Investigation of Auto Accident Insurance Data," I. Fieldhouse, J. Wingfield, September, 1968.
4.     "A Methodology for Forecasting the Distribution of Basement Planned Areas in Future Construction," D. I. Feinstein and J. Wingfield, Office of Civil Defense, 1970.
5.     Development of Implantable Medical Valve Devices, E. E. Brueschke, M.D., J. Wingfield, and J. Maness, Proceeding of the 25th Annual Conference on Engineering in Medicine and Biology, 14:337, Oct. 1973.
6.     Development of Implantable Medical Valve Devices, E. E. Brueschke, M.D., J. Wingfield, and J. Maness, American Society for Artificial Internal Organs 1973 Abstracts, Volume 2, Page 8, Boston, April 7-9, 1973.
7.     Development of a System Reliability Corporate Memory, J. Wingfield, RADC TR-77-419, January, 1978, Rome Air Development Center, Air Force Systems Command, Griffiss Air Force Base, N.Y. 13441.
8.     Biomaterial Requirements for Implantable Medical Devices, J. Maness, E. E. Brueschke, M.D., and J. Wingfield, Proceedings of the 26th Annual Conference on Engineering in Medicine and Biology, 15:204, October 1974.
9.     "Computer Integration Into Product Design, 1987," Juran Quality Control Handbook, J. Wingfield contributing author, 1987.
10.    "A Methodology for Sizing Field Experiments," J. Wingfield, 1987, subcontracted study for Reliability Technology Associates and the Gas Research Institute.

11. OSHA Training institute "Introduction to Safety Hazards," Recognition of Safety Hazards in the Workplace, J. Wingfield, 1987.
12. University of Arizona, Masters Thesis, "A Comparative Evaluation of Safe Design Alternatives." (1988).
13. "Fault Tree Approach to Hazards Analysis," Guest Lecturer, Illinois Institute of Technology, October, 1989.
14. "Reliability and Safety of Medical Devices: Introduction," Triodyne Safety Brief, v.5 #3, October 1989.
15. "Statistical Methods in Brittle Fracture Analysis," Guest Lecturer, Illinois Institute of Technology, Fall Semester, 1990.
16. "Product Design Assurance: Measures of Performance," Guest Lecturer, Illinois Institute of Technology, Spring Semester, 1991.
17. "Systems Hazards Analysis for a Fetal Contraction Monitoring Device," subcontracted study for Caremark and Orion Medical, April, 1991.
18. "Wheel Guard - Impact Study," Mi Jack Products Consultation Report, February, 1992.
19. "Reliability and Safety of Medical Devices: Part II," Triodyne Safety Brief, v.8 #2, February, 1993.
20. "Probabilistic Approach to Minimum Weight Design," guest lecturer, Illinois Institute of Technology, Fall Semester, 1993.
21. California Coast University, Ph.D. Dissertation, "An Investigation of System Reliability and Safety When Future Use is Conditioned by Prior Use," (1994).
22. "Statistical Methods in Brittle Fracture Analysis." Guest Lecturer, Illinois Institute of Technology, Spring Semester, 1996.
23. "Hazards Analysis, Systems/Product FMEA and Fault Tree Analysis," Guest Lecturer, Illinois Institute of Technology, Fall Semester, 1996.

## PATENT

US Patent: Sharps Disposal Container Full Level Detection System